Page 19, lines 1-19, delete in its entirety.

In the Claims:

Kindly cancel claims 1-10 without prejudice.

Please add the following new claims:

--11. A process for the meiotic recombination *in vivo* of partially homologous DNA sequences having up to 30% of base mismatches comprising genetically or physiologically manipulating eukaryotic cells containing said DNA sequences to render defective the enzymatic mismatch repair system of said eukaryotic cells and culturing said eukaryotic cells under conditions to result in the meiotic recombination *in vivo* of said partially homologous DNA sequences.

12. The process according to claim 11, further comprising forming and/or isolating hybrid genes and their coded proteins.

13. The process according to claim 11, wherein said eukaryotic cells are formed by mixing (a) a first group of eukaryotic cells containing a first DNA sequence and having a defective enzymatic mismatch repair system with (b) a second group of eukaryotic cells containing a second DNA sequence which is partially homologous to said first DNA sequence by having up to 30% base mismatches with said first DNA sequence and having a defective enzymatic mismatch repair system, to form diploids.

14. The process according to claim 11, wherein said eukaryotic cells are derived from unicellular organisms.

15. The process according to claim 14, wherein the unicellular organisms are yeasts.

sub c3

16. The process according to claim 11, wherein said eukaryotic cells having said defective enzymatic mismatch repair system are missing or have defective at least one eukaryotic homologue of *mutS* protein and/or at least one eukaryotic homologue of *mutL* protein.

17. The process according to claim 16, wherein said eukaryotic cells containing the partially homologous DNA sequences are missing or have defective at least one eukaryotic homologue of *mutS* proteins.

18. The process according to claim 11, wherein said eukaryotic cells containing the partially homologous DNA sequences are missing or have defective *MLH* genes, said eukaryotic cells being derived from yeast.

19. The process according to claim 11, wherein said eukaryotic cells are derived from plants.

20. The process according to claim 15, wherein said eukaryotic cells are *pms1* mutants or *msh2* mutants or *pms1 msh2* double mutants.

21. The process according to claim 11, wherein said eukaryotic cells are germ-line cells.

sub c4

22. A process of making cells of a hybrid eukaryotic specie comprising:

mixing (a) a first group of eukaryotic cells containing a first DNA sequence and having a defective enzymatic mismatch repair system which is made defective by genetic or physiological manipulation, with (b) a second group of eukaryotic cells containing a second DNA sequence which is partially homologous to said first DNA sequence by having up to 30% base mismatches with said first DNA sequence and having a defective enzymatic mismatch repair system which is made defective by genetic or physiological manipulation, to form diploids,

culturing the mixture under conditions to result in the meiotic recombination *in vivo* of said partially homologous DNA sequences, and

recovering eukaryotic cells of said hybrid eukaryotic specie--.

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

The specification has been carefully reviewed and editorial changes have been effected. All of the changes are minor in nature and therefore do not require extensive discussion. Specifically, the specification headings have been amended in conformance with U.S. practice.